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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,947	09/18/2001	Josef Steininger	13322US01	8515

7590

02/25/2004

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EXAMINER

JUNG, WILLIAM C

ART UNIT

PAPER NUMBER

3737

DATE MAILED: 02/25/2004

121

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/954,947

Applicant(s)

STEININGER ET AL.

Examiner

William Jung

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 27, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-21 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-21 and 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 27, 2004 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-21 and 23-32 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 13 recites the limitation "said drive shaft" in line 11. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 21 recites the limitation "said drive shaft" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3, 5, 6, 9, 13, 15-17, 21, 23, 25, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mochizuki et al* (US 5,152,294) in view of *Okunuki et al* (US 5,460,179).

Claims 1, 3, 9, 13, 16, 21, 23, and 29 Mochizuki et al substantially discloses all of claimed invention in claims 1, 3, 9, 13, 16, 21, 23, and 29. Mochizuki et al discloses an ultrasonic probe where the region of interest is imaged with ultrasound probe consisting of a probe housing 22 with the transducer array 28 pivotally attached within the probe housing. The transducer array is capable of rotating about the central scan plane as shown in figure 3 with the transducer rotation range, the transducer 28A is parallel to the longitudinal axis of the probe. The rotating or sweeping motion of the transducer array is controlled by a motor to form a volumetric or 3D scan consisting of a series of oblique scan plane S oriented at an desired angle increment (col. 2, lines 16-46; col. 3, lines 23-66; figures 2-4). However, Mochizuki et al do not disclose stepper motor control with drive belt or gear. Okunuki et al teaches that the stepper motor control to change the angle of the transducer array is as in Mochizuki et al's ultrasonic probe; i.e. belt 52 and gear 50 to the motor 48 to turn the pivotally mounted transducer 28 about the pivoting axis 32 (col. 6, line12- col. 8, line 60). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to improve the rotational element of the probe of Mochizuki et al with Okunuki et al because Okunuki et al teaches the control of the stepper motor disposed in the housing with belt and gear coupled to the drive shaft to achieve pivotal rotation.

Claims 5, 6, 15, 17, 18, 25, and 26: Mochizuki et al further discloses of stepper motor described above as being a stepper motor and photo or optic sensor to control the angle of the transducer array (col. 3, line 67 – col. 4, line 29).

8. Claims 4 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mochizuki et al* in view of *Cerofolini* (US 5,740,804).

Mochizuki et al substantially discloses of all claimed invention in claims 4 and 24. Mochizuki et al discloses of an ultrasonic probe where the region of interest is imaged with ultrasound probe consisting of a probe housing 22 with the transducer array 28 pivotally attached within the probe housing. The transducer array is capable of rotating about the central scan plane as shown in figure 3 with the transducer rotation range, the transducer 28A is parallel to the longitudinal axis of the probe. The swinging or sweeping motion of the transducer array is control by a motor to form a volumetric or 3D scan consisting of series of oblique scan plane S oriented at an desired angle increment (col. 2, lines 16-46; col. 3, lines 23-66; figures 2-4). However, Muchizuchi et al do not disclose of handcrank operation to control the stepper motor. Cerofolini further teaches that the rotatable transducer array 56 pivoting about a central axis 31 at predetermined angle and control via stepper motor and hand crank 64 (figures 1 and 4; col. 5, lines 18-36; col. 4, lines 21-48). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to improve Mochizuki et al's control of the rotational element via manual hand crank as taught by Cerofolini.

9. Claims 7, 8, 19, 20, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mochizuki et al* and *Okunuki et al* as applied to claims 1, 13, and 21 above, and further in view of *Angelsen* (US 4,757,818).

Mochizuki et al and Okunuki et al substantially discloses of all claimed invention in claims 7, 8, 19, 20, 27, and 28. However, Mochizuchi et al and Okunuki et al do not disclose of magnetic sensor for alignment. Angelsen further teaches that the rotating transducer array 230 about a pivoting axis 226 can be controlled with motor and the center alignment is controlled via magnetic sensor (col. 2, lines 4-24; col. 3, line 64 – col. 4, line 18). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to improve Mochizuki et al and Okunuki et al's control of the transducer rotation by using Angelsen's alignment control including magnetic sensor.

10. Claims 10, 11, 12, 14, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mochizuki et al* and *Okunuki et al* as applied to claims 1, 13, and 21 above, and further in view of *Cerofolini*.

Mochizuki et al and Okunuki et al substantially disclose of all claimed invention in claims 10, 11, 12, 14, and 30-32. However, Mochizuki et al and Okunuki et al do not disclose of use in endoscopic procedure. Claims 10, 11, 30, and 31: Cerofolini further teaches that the rotatable transducer array 56 pivoting about a central axis 31 at predetermined angle and control via stepper motor and hand crank 64 (figures 1 and 4; col. 5, lines 18-36; col. 4, lines 21-48). Claims 12, 14, and 32: Cerofolini also teaches that the probe device is design to be inserted into a patient via tracheal passage or body orifice, which would include endovaginal or rectal probe (col. 1, lines 21-39). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to improve Mochizuki et al and Okunuki et al's control of the transducer array rotation with Cerofolini's endoscopic or invasive catheter with ultrasound transducer.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Jung whose telephone number is 703-605-4364. The examiner can normally be reached on Mon-Fri 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on 703-308-2262. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 9, 2004


DENNIS W. RUHL
SUPERVISORY PATENT EXAMINER